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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/717,036	11/22/2000	Roberta Castagnetti	10676-0058-25	2446

26541 7590 09/08/2004

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EXAMINER	
TRAN, DZUNG D	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/717,036	CASTAGNETTI ET AL.	
	Examiner	Art Unit	
	Dzung D Tran	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3- MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment filed on 06/01/2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,8-12,14-21,24-30,32-40,42-49,52-58 and 60-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,8-12,14-21,24-30,32-40,42-49,52-58 and 60-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 8-12, 14, 17, 21, 24-27, 29, 43, 45, 49, 52-55, 57-58, 60-64 and 66-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. US patent no. 6,292,289 in view of Barry et al. US patent no. 6,433,903.

Regarding claims 1, 15, 43, Sugaya discloses a WDM (wavelength division multiplexing) optical communication system (figure 4) for providing automatic gain and tilt control comprising: an optical fiber 6 that carries at least one sub-band (i. e. L band or C band) of WDM optical signals, at least one of the optical signals being a reference signal λosc (col. 7, lines 39-58, col. 11, lines 30-40);

an optical gain unit 234, 244, 238, 250 coupled to the optical fiber and configured to output lights to compensate for losses and gain tilt accumulation in the sub-band (col. 18, line 15 to col. 19, line 19);

an optical supervisory circuit 20 (same as controller) configured to control the optical gain unit, the controller detecting and analyzing the reference signal to determine

power variation of the reference signals, wherein the controller outputs a control signal to the optical gain unit based upon the analyzed reference signals (col. 8, line 62 to col. 9, line 43). Sugaya differs from claims 1, 15, 43 of the present invention in that he does not specific disclose the first reference signal at a first boundary of its sub-band and the second reference signal at a second boundary of its sub-band. Barry discloses a WDM system having low end and high end optical management channel (same as reference signals) located at the boundary of the sub-band (see figure 4, col. 3, lines 26-52). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Barry in the system of Sugaya. One of ordinary skill in the art would have been motivated to do this in order to provide substantial band-width for use by a user's network management system, without significantly degrading the performance of the data channels and for managing equipment in multiple management domain (col. 3, lines 42-55).

Regarding claims 21 and 49, Sugaya further discloses the gain unit is a variable optical attenuator 216 (col. 18, lines 66-67).

Regarding claims 14, 59, 60, Sugaya further discloses one supervisory optical signal (same as reference signal) is set in the C band and the other is set in the L band (col. 9, lines 44-49, col. 17, lines 59-65).

Regarding claims 8-11, 24-27 and 52-55, Sugaya further discloses the optical supervisory circuit 20 (same as controller) processes (i.e. detect, calculate and determine) the supervisory optical signal(reference signal) so that undue degradation of

noise characteristic and gain efficiency in the optical repeater can be prevent to ensure a good transmission characteristic of the main signal (col. 9, lines 20-49).

Regarding claims 12 and 57, Sugaya further discloses for extracting and regenerating the reference signal (figure 4, col. 8, line 43 to col. 9, line 20).

Regarding claims 17, 45, Sugaya further disclose the pump light may propagate in the same direction in the EDF, thereby performing forward pumping and the pump light may propagate in the opposite direction in the EDF, thereby performing backward pumping (col. 9, lines 62-67).

Regarding claim 29, Sugaya further discloses for extracting and regenerating the reference signal (figure 4, col. 8, line 43 to col. 9, line 20).

Regarding claim 58, Sugaya further discloses the optical amplifier is an Erbium Doped Fiber Amplifier (col. 9, lines 50, 52- 66).

Regarding claims 61, 62, 64, 66 and 68, Sugaya further discloses reference signals are part of C-band and L-band (col. 11, lines 43-47).

Regarding claims 63 and 67, Sugaya further discloses an optical amplifier 16 coupled to the optical fiber and configured to amplify the optical signals, the optical gain unit providing a constant power per channel at an input of the optical amplifier (col. 8, lines 4-18, col. 18, lines 15-65).

3. Claims 2-4, 16, 18-20, 28, 30-40, 42, 44, 46-48, 56, 65 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugaya et al. US patent no. 6,292,289 in view of Barry et al. US patent no. 6,433,903 and further in view of Tanaka et al. US patent no. 6,683,712.

Regarding claims 2, 3, 16, 34 and 44, Sugaya further disclose the pump light may propagate in the same direction in the EDF, thereby performing forward pumping and the pump light may propagate in the opposite direction in the EDF, thereby performing backward pumping. The combination of Sugaya and Barry differs from claims 2, 3, 16 and 17, 34, 44, 45 of the present invention in that Sugaya and Barry do not specific disclose the optical gain unit is a Raman pump unit. Tanaka, from the field of endeavor, discloses the Raman amplifier including the Raman pumps 11 (abstract, figure 1). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the Raman pump of Tanaka in the system of Sugaya and Barry. One of ordinary skill in the art would have been motivated to do this in order to provide power or gain to different wavelengths in the WDM system and since Raman scattering can occur at any wavelength, this can be exploited to advantage in a telecommunication system that contains multiple signal wavelengths by using Raman pumps at several different wavelengths to amplify the signals. The gain seen by a given wavelength is the superposition of the gain provided by all the pumps, taking into account the transfer of energy between the pumps due to Raman scattering.

Regarding claims 33 and 65, Sugaya further discloses a variable optical attenuator 216 (col. 18, lines 66-67).

Regarding claims 4, 20 and 48, Tanaka discloses the Raman amplifier includes a plurality of laser diodes that are controlled to output a plurality of output lights, the output lights being multiplexed (figure 6, elements $11_1 ... 11_i$, 16).

Regarding claims 32, 35 and 42, Sugaya further discloses one supervisory optical signal (same as reference signal) is set in the C band and the other is set in the L band (col. 9, lines 44-49, col. 17, lines 59-65).

Regarding claims 36-39, Sugaya further discloses the optical supervisory circuit 20 (same as controller) processes (i.e. detect, calculate and determine) the supervisory optical signal (reference signal) so that undue degradation of noise characteristic and gain efficiency in the optical repeater can be prevent to ensure a good transmission characteristic of the main signal (col. 9, lines 20-49).

Regarding claims 28, 40 and 56, Sugaya further discloses for extracting and regenerating the reference signal (figure 4, col. 8, line 43 to col. 9, line 20).

Regarding claims 18, 19, 46 and 47, Tanaka further discloses the Raman pump is co-located with the controller (figure14, element 16(#1). Furthermore, whether the pump is located remotely from controller or co-located with the controller is merely an engineering design choice.

Regarding claim 30, Sugaya further discloses the optical amplifier is an Erbium Doped Fiber Amplifier (col. 9, lines 50, 52- 66).

Regarding claim 66, Sugaya further discloses reference signals are part of C-band and L-band (col. 11, lines 43-47).

4. Applicant's arguments with respect to claims 1-4, 8-12, 14—21, 24-30, 32-40, 42-49, 52-58, 60-68 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung Tran whose telephone number is (571) 272-3025.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

Supervisor, Jason Chan, can be reached on (571) 272--3022.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

M. R. SEDIGHIAN
PRIMARY EXAMINER